

## WHAT IS CLAIMED IS:

1. A load-adjustable surface acoustic wave actuator arrangement comprising:

5 a platform having two sliding bearings symmetrically disposed at two sides;  
a surface acoustic wave actuator disposed in said platform between said sliding bearings for producing a surface acoustic wave at a top surface thereof;

a slider disposed inside said platform and movable by said surface acoustic wave actuator along said sliding bearings, said slider having a pressure bearing  
10 structure disposed in contact with the top surface of said surface acoustic wave actuator,  
and two positioning portions respectively supported on said sliding bearings; and

a support structure for applying a predetermined force to said positioning portions of said slider subject to a load carried on said slider, keeping the contact pressure between said slider and said surface acoustic wave actuator about a constant  
15 value.

2. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 1, wherein said support structure is disposed at said sliding bearings.

3. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 1, wherein said support structure is disposed at the positioning  
20 portions of said slider.

4. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 1, wherein said platform comprises a receiving space, which accommodates said slider; said sliding bearings are grooves symmetrically disposed at two sides in said receiving space.

25 5. The load-adjustable surface acoustic wave actuator arrangement as

claimed in claim 4, wherein said support structure comprises a first gas supplier and a second gas supplier, said first gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at bottom sidewalls of said sliding bearings and controlled to provide an upward gas pressure to the positioning portions of said slider, said second gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at top sidewalls of said sliding bearings and controlled to provide a downward gas pressure to the positioning portions of said slider.

6. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 5, wherein said support structure further comprises a third gas supplier, said third gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at lateral sidewalls of said sliding bearings and controlled to provide a lateral gas pressure to two opposite lateral sides of said slider, keeping movement of said slider along said sliding bearings in direction.

7. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 4, wherein said support structure comprises a first gas supplier and a second gas supplier, said first gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at bottom sidewalls of the positioning portions of said slider and controlled to supply a gas to said sliding bearings so as to give an upward pressure to the positioning portions of said slider, said second gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at top sidewalls of the positioning portions of said slider and controlled to supply a gas to said sliding bearings so as to give a downward pressure to the positioning portions of said slider.

8. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 7, wherein said support structure further comprises a third gas

supplier, said third gas supplier having an independent gas source and a plurality of gas nozzles arranged in lines at lateral sidewalls of the positioning portions of said slider and controlled to respectively supply a gas to said sliding bearings so as to respectively provide a lateral gas pressure to two opposite lateral sides of said slider, keeping  
5 movement of said slider along said sliding bearings in direction.

9. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 4, wherein said support structure comprises a first hydraulic device and a second hydraulic device, said first hydraulic device having a plurality of output nozzles arranged in lines at bottom sidewalls of said sliding bearings and controlled to  
10 provide an upward hydraulic fluid pressure to the positioning portions of said slider, said second hydraulic device having a plurality of output nozzles arranged in lines at top sidewalls of said sliding bearings and controlled to provide a downward hydraulic fluid pressure to the positioning portions of said slider.

10. The load-adjustable surface acoustic wave actuator arrangement as  
15 claimed in claim 9, wherein said support structure further comprises a third hydraulic device, said third hydraulic device having a plurality of output nozzles arranged in lines at lateral sidewalls of said sliding bearings and controlled to provide a lateral hydraulic fluid pressure to two opposite lateral sides of said slider, keeping movement of said slider along said sliding bearings in direction.

20 11. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 4, wherein said support structure comprises a first hydraulic device and a second hydraulic device, said first hydraulic device r having a plurality of output nozzles arranged in lines at bottom sidewalls of the positioning portions of said slider and controlled to supply a hydraulic fluid to said sliding bearings so as to give an  
25 upward pressure to the positioning portions of said slider, said second hydraulic device

having a plurality of output nozzles arranged in lines at top sidewalls of the positioning portions of said slider and controlled to supply a hydraulic fluid to said sliding bearings so as to give a downward pressure to the positioning portions of said slider.

12. The load-adjustable surface acoustic wave actuator arrangement as  
5 claimed in claim 11, wherein said support structure further comprises a third hydraulic device, said third hydraulic device having a plurality of output nozzles arranged in lines at lateral sidewalls of the positioning portions of said slider and controlled to provide a lateral hydraulic fluid pressure to two opposite lateral sides of said slider, keeping movement of said slider along said sliding bearings in direction.

10 13. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 4, wherein said support structure comprises a first electromagnetic device and a second electromagnetic device, said first electromagnetic device being arranged at bottom sidewalls of said sliding bearings and corresponding sides of the positioning portions of said slider controlled to provide an upward magnetic force to  
15 the positioning portions of said slider, said second electromagnetic device being arranged at top sidewalls of said sliding bearings and corresponding sides of the positioning portions of said slider and controlled to provide a downward magnetic force to the positioning portions of said slider.

14. The load-adjustable surface acoustic wave actuator arrangement as  
20 claimed in claim 13, wherein said support structure further comprises a third electromagnetic device arranged at lateral sidewalls of said sliding bearings and corresponding sides of the positioning portions of said slider and controlled to provide a lateral magnetic force to two opposite lateral sides of said slider, keeping movement of said slider along said sliding bearings in direction.

25 15. The load-adjustable surface acoustic wave actuator arrangement as

claimed in claim 1, wherein said slider comprises a slider body suspended inside said platform; said positioning portions of said slider are respectively horizontally extended from two opposite lateral sides of said slider body and supported on said sliding bearings and respectively spaced from lateral sidewalls of said sliding bearings at a  
5 distance for receiving the predetermined force from said support structure.

16. The load-adjustable surface acoustic wave actuator arrangement as claimed in claim 1, wherein said slider comprises a pressure sensor for detecting the pressure of load carried on said slider and to transmit detected pressure signal to a processor for enabling said processor to control the operation of said support structure.

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